

APPENDIX 1

A-1. ALLEGHENY STEEL RUN

A-1.1 Watershed Description

Allegheny Steel Run is in the southern portion of the Upper Ohio North watershed, as shown in Figure A-1-1, and drains approximately 1.19 square miles (761.87 acres). Figure A-1-2 shows the land use distribution for the watershed. The dominant land use in the watershed is forest, which covers 66.96 percent of the watershed. Other important land use types include urban/residential (27.58 percent) and agricultural land (5.42 percent). All other land cover types account for less than 1 percent of the total watershed area.

There are two impaired streams in the Allegheny Steel Run watershed, including Allegheny Steel Run itself. Figure A-1-3 shows the impaired segments and the pollutants for which each is impaired.

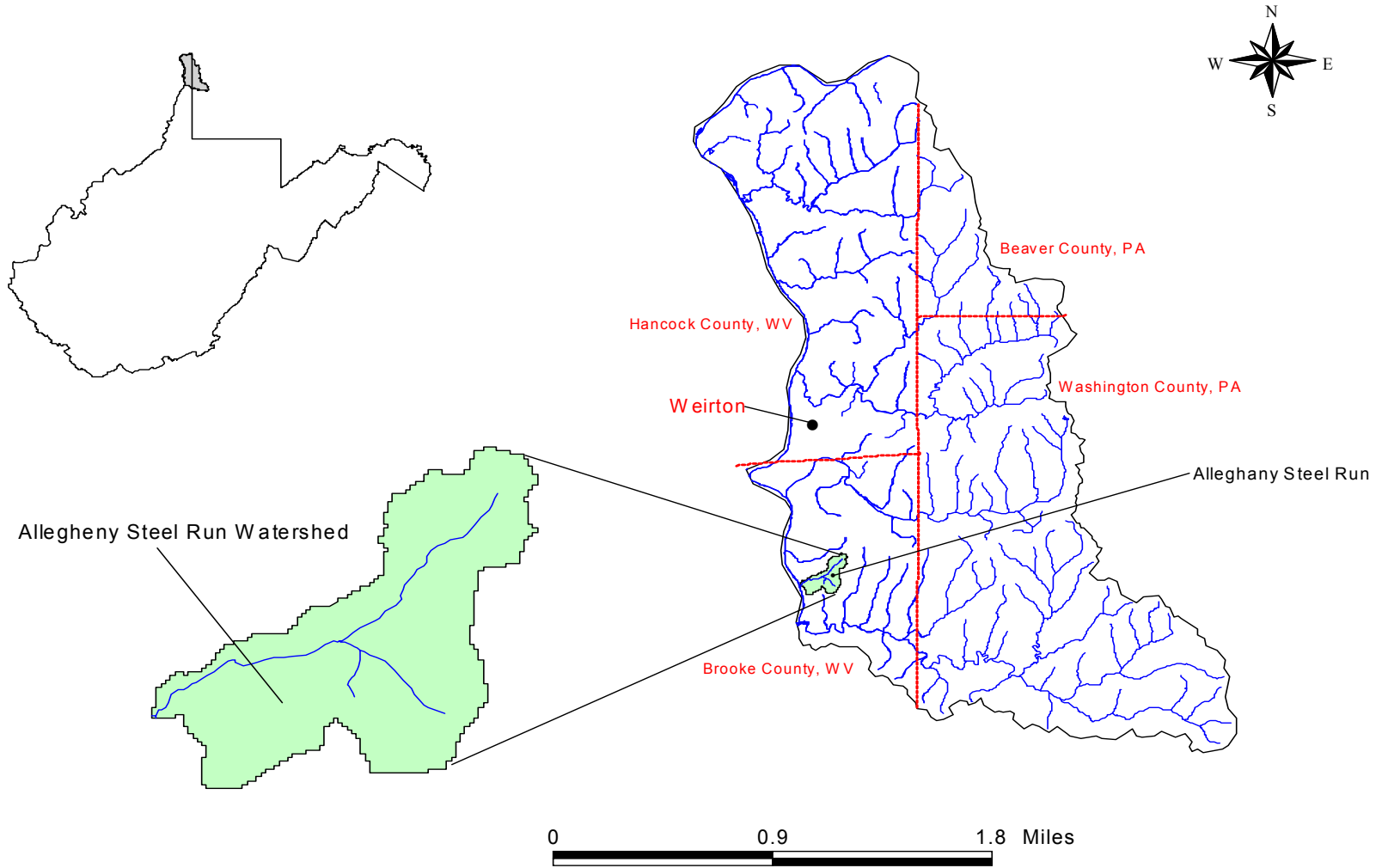


Figure A-1-1. Location of the Allegheny Steel Run watershed

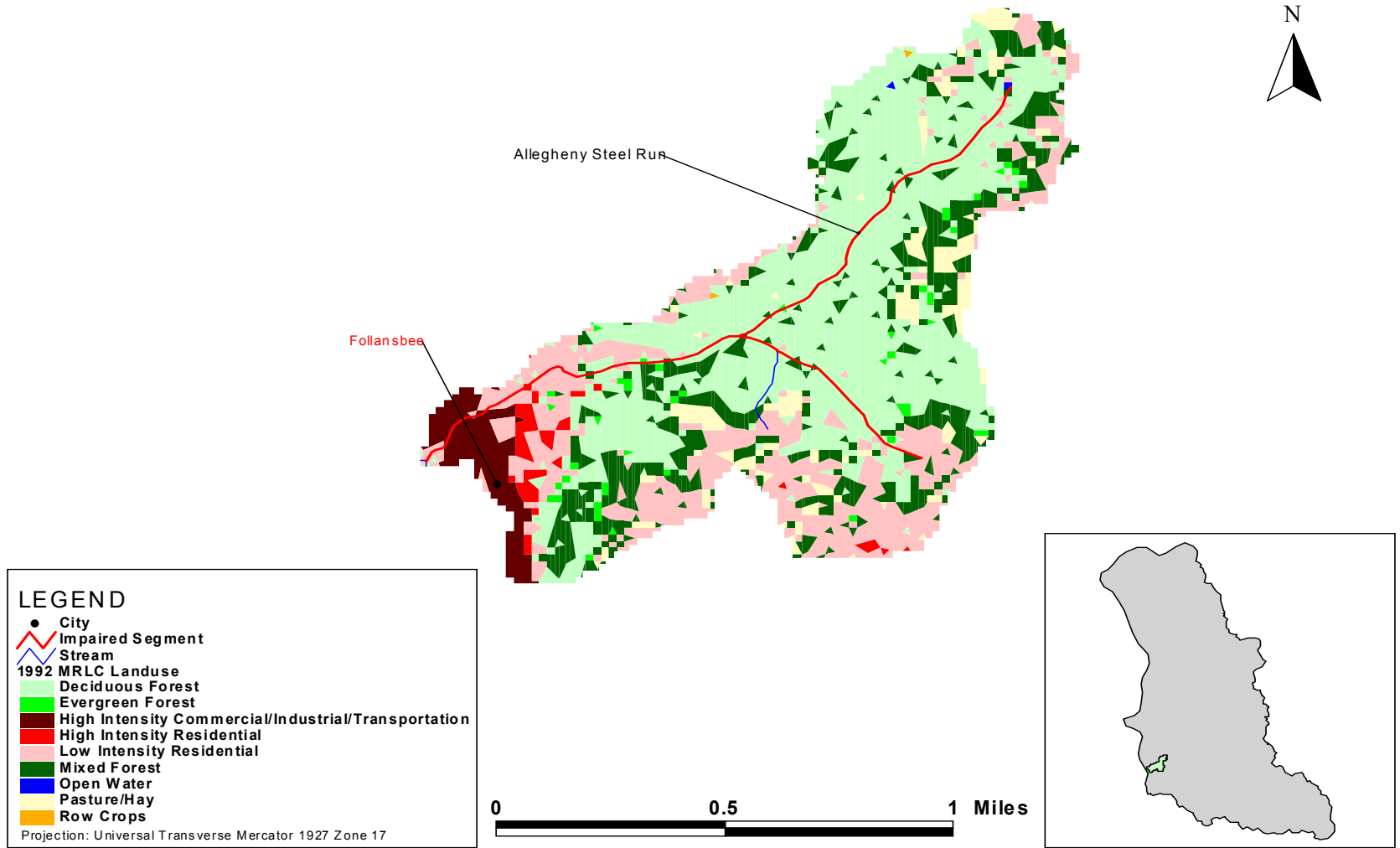


Figure A-1-2. Land use distribution in the Allegheny Steel Run watershed

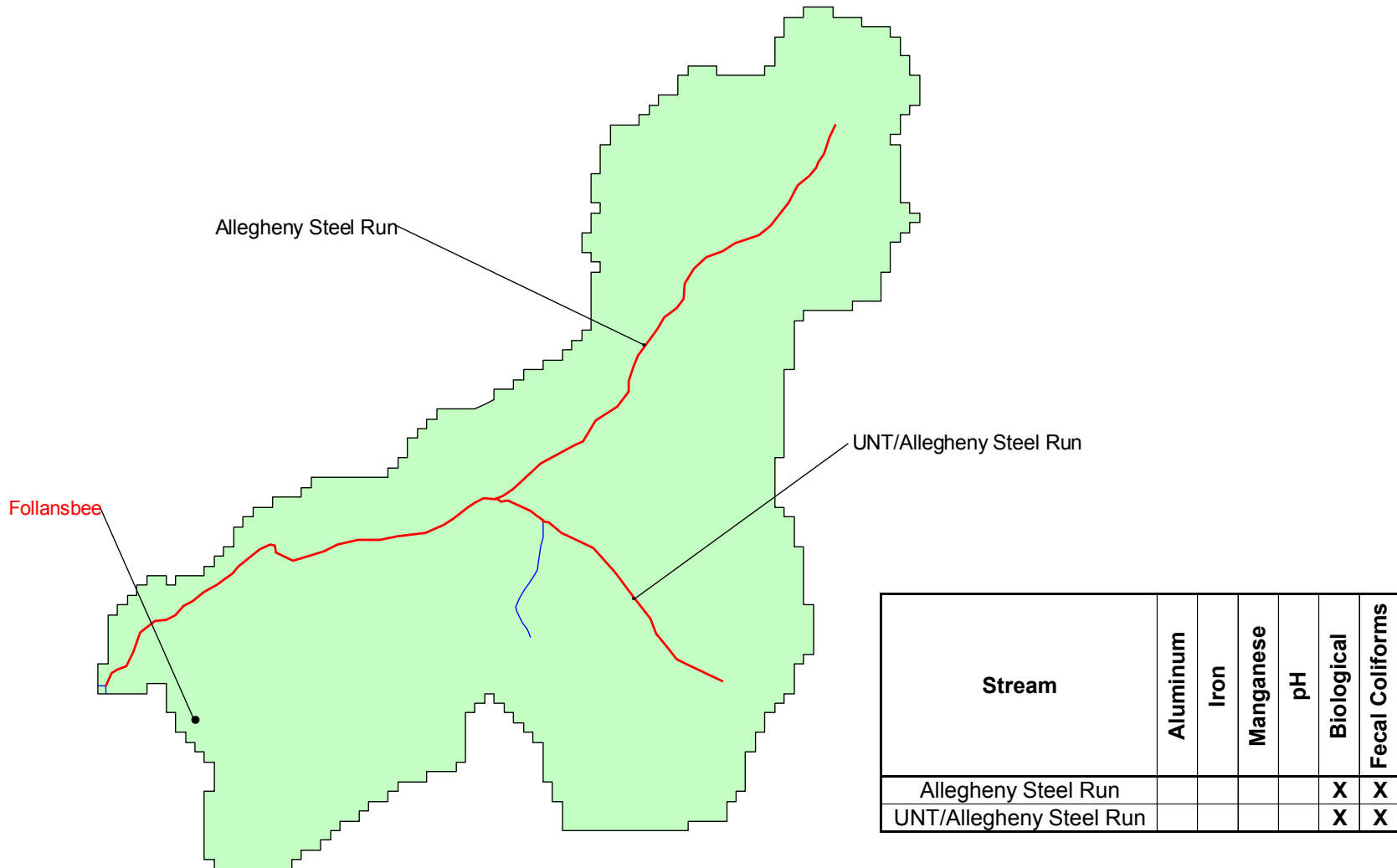


Figure A-1-3. Impaired waterbodies in the Allegheny Steel Run watershed

A-1.2 Pre-TMDL Monitoring

Before establishing Total Maximum Daily Loads (TMDLs), WVDEP conducted monitoring in each of the impaired streams in the Upper Ohio North watershed; to characterize water quality and refine impairment listings. Monthly samples were taken at 96 stations from July 1, 2001, to June 30, 2002. The locations of the pre-TMDL monitoring stations in the Allegheny Steel Run watershed are shown in Figure A-1-4. The parameters monitored at each site were determined based on the types of impairments observed in each stream. Streams impaired by metals and low pH were sampled monthly and analyzed for a suite of parameters (including total iron, dissolved iron, total aluminum, dissolved aluminum, total manganese, total suspended solids, pH, sulfate, and specific conductance). Monthly samples from streams impaired by fecal coliform bacteria were analyzed for this parameter, pH, and specific conductance. Benthic macroinvertebrate assessments were performed at specific locations on the biologically impaired streams during the pre-TMDL monitoring period. Appropriate monitoring suites were selected for streams with multiple impairments. For example, if a stream was impaired for metals and fecal coliform bacteria, the samples were analyzed for total iron, dissolved iron, total aluminum, dissolved aluminum, total manganese, total suspended solids, pH, sulfate, specific conductance, and fecal coliform bacteria. When conditions allowed, instantaneous flow measurements were also taken at the pre-TMDL sampling locations.

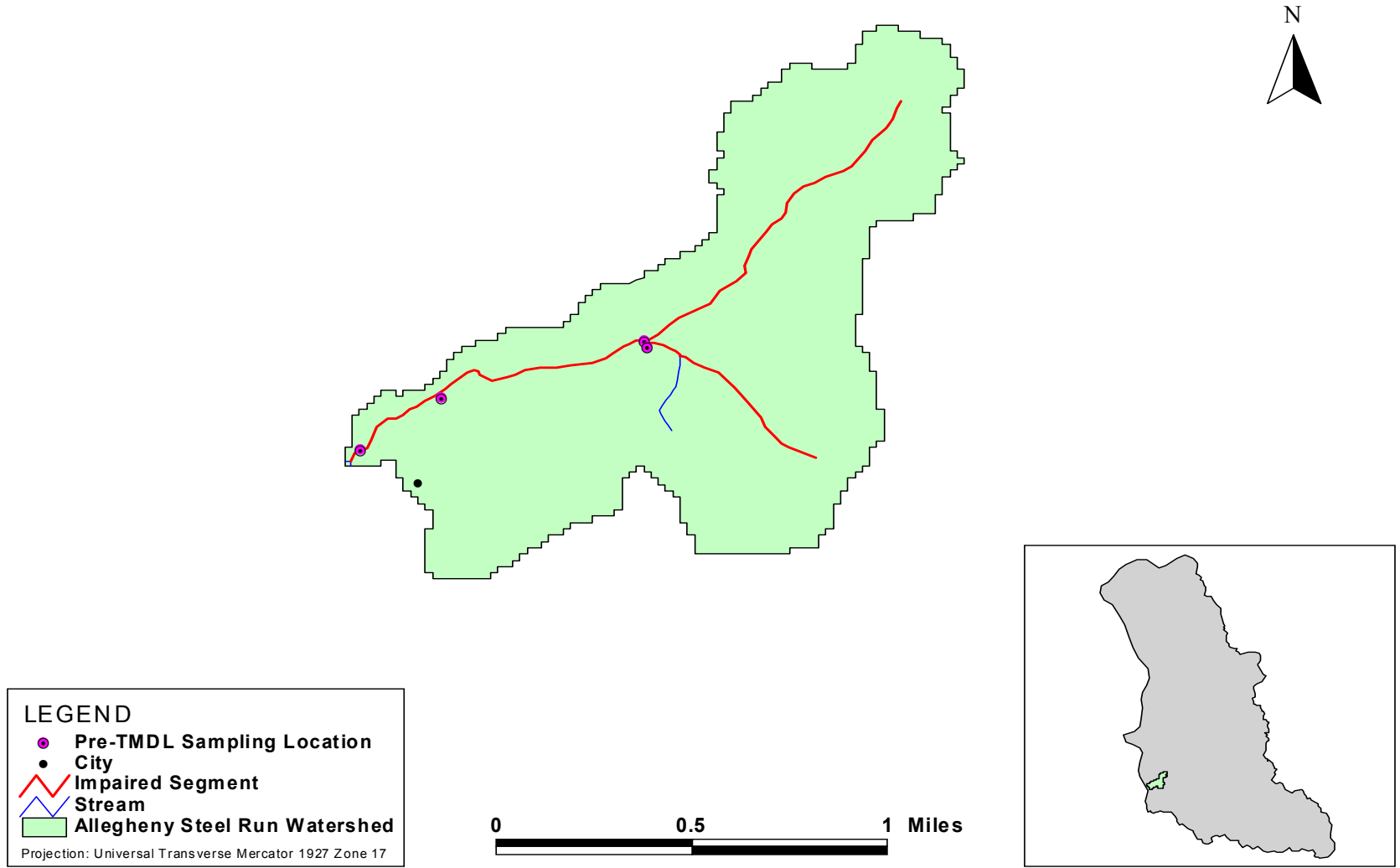


Figure A-1-4. Pre-TMDL monitoring stations in the Allegheny Steel Run watershed

A-1.3 Metals and pH Sources

No streams in the Allegheny Steel Run watershed have metals impairments or pH impairments.

A-1.4 Fecal Coliform Bacteria Sources

This section identifies and examines the potential sources of fecal coliform bacteria in the Allegheny Steel Run watershed. Sources can be classified as either point sources (specific sources subject to a permit) or nonpoint sources (nonpermitted). Point sources of fecal coliform bacteria are classified by several different types of sewage permits and the point source discharges regulated therein. Nonpoint sources are diffuse, nonpermitted sources.

A-1.4.1 Fecal Coliform Bacteria Point Sources

Permitted sources of fecal coliform bacteria that experience effluent overflows or that do not comply with permit limits can cause occasional high loadings of fecal coliform bacteria in receiving streams. In the Allegheny Steel Run watershed there is one discharge permit with fecal coliform limits; it is an individual publicly owned treatment works for the City of Follansbee. The city also has two combined sewer overflows; one flows into Allegheny Steel Run and the other flows into the first unnamed tributary of Cross Creek. The City of Follansbee is also a designated municipal separate storm sewer system (MS4) municipality. Combined sewer overflows and potential cross-connections between sanitary sewer lines and storm sewers have been identified by WVDEP source-tracking efforts as apparent point sources of fecal coliform bacteria in the watershed.

USEPA's stormwater permitting regulations require municipalities to obtain permit coverage for all stormwater discharges from MS4s. These MS4 discharges must be considered in the TMDL as wasteloads. Because the City of Follansbee has filed a Notice of Intent for MS4 permit issuance, and because of the lack of clearly defined MS4s drainage areas, the urban and residential land use area associated with the City of Follansbee is assumed to be subject to MS4 stormwater permits. The source loadings associated with stormwater runoff from the urban and residential land uses were included in the MS4 wasteload allocation for the City of Follansbee.

A-1.4.2 Nonpoint (Nonpermitted) Fecal Coliform Bacteria Sources

Pollutant source tracking by WVDEP personnel shows that the majority of the Allegheny Steel Run watershed is served by a public sewer system and small unsewered areas exist in the eastern portion of the watershed (the unnamed tributary of Allegheny Steel Run watershed). Failing septic systems and straight pipes have been identified by WVDEP source-tracking efforts as apparent nonpoint sources of fecal coliform bacteria in the watershed.

Stormwater runoff is another potential nonpoint source of fecal coliform bacteria in both residential/urban and rural areas. Runoff from residential areas can be a significant source, delivering bacteria found in litter and in the waste of pets and wildlife to the waterbody. Rural stormwater runoff can also transport significant loads of bacteria from livestock pastures,

livestock and poultry feeding facilities, and manure storage and application. However, Allegheny Steel Run is primarily an urban/residential watershed and therefore bacteria contributions from stormwater runoff from agricultural practices are minimal.

A certain “natural background” contribution of fecal coliform bacteria can be attributed to deposition by wildlife in forested areas. Accumulation rates for fecal coliform bacteria in forested areas were developed using reference numbers from past TMDLs, incorporating wildlife estimates obtained from the West Virginia Division of Natural Resources. Although wildlife contributions of fecal coliform bacteria were considered in modeling, they were not found to be a significant source.

A-1.5 Sources of Biological Impairment

A-1.5.1 Causative Stressors

The Allegheny Steel Run watershed has two biologically impaired streams for which TMDLs have been developed. These streams are identified in Table A-1-1 along with the primary stressors of the streams’ benthic communities and the TMDLs required to address these impairments. Please refer to the main report for a description of the stressor identification process.

Table A-1-1. Primary stressors of biologically impaired streams in the Allegheny Steel Run watershed

Stream	Primary Stressors	TMDLs Required
Allegheny Steel Run	Organic enrichment	Fecal coliform bacteria
Unnamed tributary to Allegheny Steel Run	Organic enrichment	Fecal coliform bacteria

The fecal coliform bacteria TMDLs presented in Table A-1-2 are surrogates for the organic enrichment biological stressor. Please refer to section A-1.4 for source information.

A-1.6 TMDLs for the Allegheny Steel Run Watershed

A-1.6.1 TMDL Development

TMDLs and source allocations were developed for impaired streams in the Allegheny Steel Run watershed. A top-down methodology was followed to develop these TMDLs and allocate loads to sources. Headwaters were analyzed first because they have a profound effect on downstream water quality. Loading contributions were reduced from applicable sources in these waterbodies and TMDLs were developed. Refer to section 7.4 of the main report for a detailed description of allocation methodologies used in the development of the pollutant-specific TMDLs.

The TMDLs for fecal coliform bacteria are shown in Table A-1-2 and are presented as annual loads, in terms of the number of fecal coliform colonies per year.

Table A-1-2. Fecal coliform bacteria TMDLs for the Allegheny Steel Run watershed

Major Watershed	Stream Code	Stream Name	Parameter	Load Allocation (counts/yr)	Wasteload Allocation (counts/yr)	Margin of Safety (counts/yr)	TMDL (counts/yr)
ALLEGHENY STEEL RUN	O-95.5	Allegheny Steel Run	Fecal coliform	7.39E+12	3.09E+12	5.51E+11	1.10E+13
ALLEGHENY STEEL RUN	O-95.5-A	UNT/Allegheny Steel Run	Fecal coliform	3.03E+12	NA	1.60E+11	3.19E+12

NA = not applicable; UNT = unnamed tributary.